WHAT IS CLAIMED IS:

1. A method for optimizing the transmission of TCP/IP traffic across a DOCSIS network, comprising the steps of:

(a) transmitting fields in a protocol header of a first TCP protocol packet;

(b) suppressing redundant fields in protocol headers of subsequent TCP protocol packets; and

(c) transmitting a delta-encoded value for each non-redundant field in said protocol headers of subsequent TCP protocol packets, wherein said delta-encoded value represents a change in value from said non-redundant field in said protocol header of a previous TCP protocol packet.

2. The method of claim 1, wherein step (a) further comprises the step of transmitting said first TCP protocol packet with an indicator, wherein said indicator indicates that said first TCP protocol packet is to be learned.

3. The method of claim 1, wherein step (a) further comprises the step of transmitting said first TCP protocol packet in its entirety and transmitting subsequent protocol headers in a compressed format.

4. The method of claim 1, wherein said subsequent TCP protocol packets begin with a bitmapped change byte, wherein bits in said bitmapped change byte indicate which of said non-redundant fields in said protocol header has said delta encoded value.

5. The method of claim 1, further comprising the steps of:

(d) enabling a receiver to learn said first TCP protocol packet;

(e) enabling a receiver to restore said suppressed redundant fields in said protocol headers of subsequent TCP protocol packets using said first TCP protocol packet;

(f) enabling a receiver to restore said non-redundant fields in said protocol headers of subsequent TCP protocol packets using said delta-encoded values; and

(g) enabling a receiver to place said restored header in front of any received data for transmission over an Internet Protocol network.

6. The method of claim 4, further comprising the steps of:

(d) enabling a receiver to read said bitmapped change byte;

(e) enabling a receiver to retrieve said delta encoded values using said bitmapped change byte;

(f) enabling a receiver to update said non-recurring fields in said protocol header using said delta-encoded values; and

(g) enabling a receiver to restore said protocol header to its original format.

7. The method of claim 6, further comprising the step of placing said restored protocol header in front of any received data for transmission over an Internet Protocol network.

8. A method for sending packets over a TCP/IP transmission medium, comprising the steps of:

(a) receiving fields in a protocol header of a first TCP protocol packet;

(b) receiving suppressed fields in said protocol headers of subsequent TCP protocol packets; and

(c) receiving a delta-encoded value for each non-redundant field in said protocol headers of subsequent TCP protocol packets, wherein said delta-

encoded value represents a change in value from said non-redundant field in said protocol header of a previous TCP protocol packet.

9. The method of claim 8, wherein step (a) further comprises the step of receiving an indicator with said first TCP protocol packet, wherein said indicator indicates that said first TCP protocol packet is to be learned.

10. The method of claim 8, wherein said subsequent TCP protocol packets include a bitmapped change byte, wherein bits in said bitmapped change byte indicate which of said non-redundant fields in said protocol header has said delta encoded values.

11. The method of claim 8, further comprising the steps of:

(d) learning said first TCP protocol packet;

(e) using learned information from said first TCP protocol packet to reconstruct said suppressed fields in said protocol header of a current TCP protocol packet; and

(f) using the subsequent TCP protocol packet to reconstruct said non-redundant fields in said protocol header of said present TCP protocol packet.

12. The method of claim 11, further comprising the step of restoring said present TCP protocol packet to its original format and transmitting said present TCP protocol packet over an Internet Protocol network.

13. A computer program product comprising a computer useable medium including control logic stored therein, said control logic for optimizing the transmission of TCP/IP traffic across a DOCSIS network, said control logic comprising:

first means for enabling a processor to transmit fields in a protocol header of a first TCP protocol packet;

means for enabling a processor to suppress redundant fields in protocol headers of subsequent TCP protocol packets; and

second means for enabling a processor to transmit a delta-encoded value for each non-redundant field in said protocol headers of subsequent TCP protocol packets, wherein said delta-encoded value represents a change in value from said non-redundant field in said protocol header of a previous TCP protocol packet.

14. The computer program product of claim 13, wherein said first means for enabling a processor to transmit further comprises means for enabling a processor to transmit said first TCP protocol packet with an indicator, wherein said indicator indicates that said first TCP protocol packet is to be learned.

15. The computer program product of claim 13, wherein said first means for enabling a processor to transmit further comprises means for enabling a processor to transmit said first TCP protocol packet in its entirety and transmit said subsequent protocol headers in a compressed format.

16. The computer program product of claim 13, wherein said subsequent TCP protocol packets begin with a bitmapped change byte, wherein bits in said bitmapped change byte indicate which of said non-redundant fields in said protocol header has said delta encoded value.

17. The computer program product of claim 13, further comprising:

means for enabling a processor to enable a receiver to learn said first TCP protocol packet;

means for enabling a processor to enable a receiver to restore said suppressed redundant fields in said protocol headers of subsequent TCP protocol packets using said first TCP protocol packet;

means for enabling a processor to enable a receiver to restore said non-redundant fields in said protocol headers of subsequent TCP protocol packets using said delta-encoded values; and

means for enabling a processor to enable a receiver to place said restored header in front of any received data for transmission over an Internet Protocol network.

18. The computer program product of claim 16, further comprising:

means for enabling a processor to enable a receiver to read said bitmapped change byte;

means for enabling a processor to enable a receiver to retrieve said delta encoded values using said bitmapped change byte;

means for enabling a processor to enable a receiver to update said non-recurring fields in said protocol header using said delta-encoded values; and

means for enabling a processor to enable a receiver to restore said protocol header to its original format.

19. The computer program product of claim 18, further comprising means for enabling a processor to place said restored protocol header in front of any received data for transmission over an Internet Protocol network.

20. A computer program product comprising a computer useable medium including control logic stored therein, said control logic for enabling packets to be sent over a TCP/IP transmission medium, said control logic comprising:

first means for enabling a processor to receive fields in a protocol header of a first TCP protocol packet;

second means for enabling a processor to receive suppressed fields in said protocol headers of subsequent TCP protocol packets; and

third means for enabling a processor to receive a delta-encoded value for each non-redundant field in said protocol headers of subsequent TCP protocol packets, wherein said delta-encoded value represents a change in value from said non-redundant field in said protocol header of a previous TCP protocol packet.

21. The computer program product of claim 20, wherein said first means for enabling a processor to receive further comprises means for enabling a processor to receive an indicator with said first TCP protocol packet, wherein said indicator indicates that said first TCP protocol packet is to be learned.

22. The computer program product of claim 20, wherein said subsequent TCP protocol packets include a bitmapped change byte, wherein bits in said bitmapped change byte indicate which of said non-redundant fields in said protocol header has said delta encoded values.

23. The computer program product of claim 20, further comprising:

means for enabling a processor to learn said first TCP protocol packet;

means for enabling a processor to use learned information from said first TCP protocol packet to reconstruct said suppressed fields in said protocol header of a current TCP protocol packet; and

means for enabling a processor to use the subsequent TCP protocol packet to reconstruct said non-redundant fields in said protocol header of said present TCP protocol packet.

24. The computer program product of claim 23, further comprising means for enabling a processor to restore said present TCP protocol packet to its original format and transmit said present TCP protocol packet over an Internet Protocol network.